UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,782	12/24/2003	Hun Gun Park	YHK-0123	9459

34610 7590 10/07/2008

KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

EXAMINER	
SANEI, HANA ASMAT	
ART UNIT	PAPER NUMBER
2889	
MAIL DATE	DELIVERY MODE
10/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/743,782	PARK ET AL.	
	Examiner	Art Unit	
	HANA A. SANEI	2889	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *49,51-55,57,59 and 61-100* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *49,51-55,57 and 59* is/are allowed.

6)☒ Claim(s) *61-100* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/8/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

Applicant's submission filed on 7/8/08 has been entered.

Cancellation of claim(s) 1-48, 50, 56, 58, 60 has been entered.

Claim(s) 49, 51-55, 57, 59, 61-100 are pending in the instant application.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 69-71, 73, 75, 90, 95-100 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (JP 2001-325887) of prior record.

Regarding Claim 69, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1a, 1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis); and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (H-axis) between

adjacent first and second bus electrodes (2a, 2b; that the black layer 18 encompasses 2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the first and second bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one of the first and second transparent electrode (Ia, Ib) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to a corresponding first and second bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left “link” part &

right “link” part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6).

Regarding Claim 70, Yoshida teaches a corner formed between the third ("head") portion and the fourth portion (the "link") has an angle near 90 degrees (see figure 6).

Regarding Claim 71, Yoshida teaches the fourth portion ("link") includes at least one linking portion overlapping a corresponding barrier rib (18) for connecting to a corresponding first and second transparent electrode (1a,1b) of an adjacent cell (16; see figure 6).

Regarding Claim 73, Yoshida teaches the barrier ribs (13; figure 3) are formed in the second direction (see figure 3).

Regarding Claim 75, Yoshida teaches the third portion has a largest length in the second direction compared to the first, second and fourth portion s(see figure 6; the "second" direction being the direction address electrodes 7 are made; the "head" part is longer than the other parts of the transparent electrode).

Regarding Claim 90, Yoshida teaches the first and second bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 95, Yoshida teaches that each column of discharge cells (plurality of 15) in the second direction has adjacent discharge cells aligned in the second direction such that each column is a straight column of discharge cells (refer now to Fig. 13, applicant is claim that each “adjacent” cell is a straight column).

Regarding Claim 97, Yoshida teaches that a first and second bus electrode (2) is not shared between adjacent rows (horizontal rows that do not correspond to the "first direction") of discharge cells formed in the first direction (Fig. 10)

Regarding Claim 96, Yoshida teaches that address electrodes (7, data electrodes) formed in the second direction do not overlap with barrier ribs (19) formed in the second direction (refer to Fig. 9, 11, where *some* address electrodes do not overlap).

Regarding Claim 98, Yoshida teaches that the black layers (18, refer now to Fig. 8) do not contact the transparent electrodes (1) or the first and second bus electrodes (2).

Regarding Claim 99, Yoshida teaches that the width of the black layer (part of the width of the black layer, 18, refer now to Fig. 8) is greater than the width of the first and second bus electrode (2).

Regarding Claim 100, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1a, 1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed between adjacent first and second

bus electrodes (2a, 2b; that the black layer 18 encompasses 2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the first and second bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one of first and second transparent electrode (la, lb) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the first and second bus electrode (2a, 2b) (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left “link” part & right “link” part), each portion

extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6), and address electrodes (7, data electrodes) formed in the second direction do not overlap with barrier ribs (19) formed in the second direction (refer to Fig. 9, 11, where *some* address electrodes do not overlap).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 61-68, 72, 74, 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Amemiya (5640068) of prior record.

Regarding Claim 61, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1a,1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis); and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (H-axis) between

adjacent first and second bus electrodes (2a, 2b; that the black layer 18 encompasses 2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (la, lb) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) has a width wider than that of the third portion, the widest width of the fourth portion within the discharge cell (16) is

greater than a widest width of second portion and the third portion (see Fig. 6). Yoshida is silent regarding the shortest discharge gap.

In the same field of endeavor of discharge gaps between opposing and confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the “projecting portions” 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding claim 62, Yoshida teaches a corner formed between the third ("head" part) portion and fourth portion (the "link" part) has an angle near 90 degrees (see figure 6, the head part and the link part form a right angle).

Regarding claim 63, Yoshida teaches the fourth portion (the "link" part) includes at least one linking portion overlapping a corresponding barrier rib (18; figure 6) for connecting to a first and second transparent electrode (1a, 1b) of an adjacent cell (16; see figure 6).

Regarding claim 65, Yoshida teaches the widest width of the first portion (not numbered; figure 6; the "strip" part of 1 a, 1 b) is less than a widest width of the second portion (the "expanding" part) and the third portion (the "head" part).

Regarding claim 66, Yoshida teaches the barrier ribs (13; figure 3) are formed in the second direction (see figures 3 and 6).

Regarding claim 68, Yoshida teaches the third portion (the "head") has a largest length in the second direction (the formation of the address electrodes 7) compared to the first (the "strip"), the second (the "expanding" part), and the fourth (the "link" part) portions (see figure 6, the "head" is longer in the direction of electrodes 7 than the rest).

Regarding claim 89, Yoshida teaches the bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 64, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1 a,1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis); and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (H-axis) between adjacent first and second bus electrodes (2a, 2b; that the black layer 18 encompasses

2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (Ia, Ib) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) has a width wider than that of the third portion, the widest width of the fourth portion within the discharge cell (16) is

greater than a widest width of second portion and the third portion (see Fig. 6). Yoshida is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18, Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to [ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 67, Yoshida-Amemiya teaches that two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37).

Motivation to combine would be the same as stated in Claim 64.

Regarding Claim 72, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18, Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to [ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 74, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida is silent regarding the shortest discharge gap.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

3. Claims 76-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Betsui et al (US 5825128).

Regarding Claim 76, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines 32-35).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells

Regarding Claim 77, Yoshida-Betsui teaches that the angle is greater than 0 and less than 90 degrees (45 degrees, see Fig. 3).

Motivation to combine would be the same as stated in the rejection above.

Regarding Claim 78, Yoshida-Betsui teaches that the angle is greater than 90 and less than 180 degrees (135 degrees, Fig. 3)

Motivation to combine would be the same as stated in the rejection above.

4. Claims 79-88, 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Betsui et al (US 5825128) in further view of Amemiya (5640068).

Regarding Claim 79, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1 a,1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis); and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (H-axis) between adjacent first and second bus electrodes (2a, 2b; that the black layer 18 encompasses 2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13;

Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (Ia, Ib) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left “link” part & right “link” part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6). Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees

with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines 32-35). Yoshida-Betsui is silent regarding the shortest discharge gap.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells and to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida-Betsui in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 80, Yoshida-Betsui teaches that the angle is greater than 0 and less than 90 degrees (45 degrees, see Fig. 3).

Motivation to combine would be the same as stated in the rejection above.

Regarding Claim 81, Yoshida-Betsui teaches that the angle is greater than 90 and less than 180 degrees (135 degrees, Fig. 3)

In regard to claim 82, Yoshida teaches a corner formed between the third ("head") portion and the fourth portion (the "link") has an angle near 90 degrees (see figure 6).

In regard to claim 83, Yoshida ('887) teaches the fourth portion ("link") includes at least one linking portion overlapping a corresponding barrier rib (18) for connecting to a transparent electrode (1a,1b) of an adjacent cell (16; see figure 6).

Regarding Claim 84, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of first and second transparent electrodes (1a, 1b) and a plurality of first and second bus electrodes (2a, 2b); each first bus electrode (2a in H-axis) being coupled to a corresponding transparent electrode (1a in H-axis) and formed in a first direction (H-axis, see Fig. 6) and each second bus electrode (2b in H-axis) being couple to a corresponding second transparent electrode (1b in H-axis) in the first direction (H-axis); and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (H-axis) between adjacent first and second bus electrodes (2a, 2b; that the black layer 18 encompasses 2, then at least a peripheral portion of 18, along the H-axis, is *between* adjacent bus electrodes); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one

transparent electrode (la, lb) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left “link” part & right “link” part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6). Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines

32-35). Yoshida-Betsui is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the “projecting portions” 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18, Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to [ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells and to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida-Betsui in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

In regard to claim 85, Yoshida ('887) teaches a widest width of the first portion ("strip" part) is less than a widest width of the second ("expanding" part) and the third ("head") portion (see figure 6).

In regard to claim 86, Yoshida ('887) teaches the barrier ribs (13; figure 3) are formed in the second direction (see figure 3).

Regarding Claim 87, Yoshida-Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the “projecting portions” 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37).

Motivation to combine would be the same as stated in the rejection above.

In regard to claim 88, Yoshida teaches the third portion has a largest length in the second direction compared to the first, second and fourth portion s(see figure 6; the "second" direction being the direction address electrodes 7 are made; the "head" part is longer than the other parts of the transparent electrode).

In regard to claims 89 and 91, Yoshida teaches the bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 92, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 60 to 90 microns (ge =70 microns, Col. 5, lines 45-51).

Motivation to combine would be the same as stated in the rejection above.

Regarding Claim 93, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 70 to 80 microns (ge =70 microns, Col. 5, lines 45-51).

Motivation to combine would be the same as stated in the rejection above.

Regarding Claim 94, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 74 to 78 microns (ge =70 microns, Col. 5, lines 45-51).

Motivation to combine would be the same as stated in the rejection above.

Allowable Subject Matter

A. Claims 49, 51 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, at least one transparent electrode of said transparent electrode pair including: an expanding part having a width which enlarges towards a center of the discharge cell, and a head part connected to the expanding part and having at least a substantially constant width; a barrier rib for dividing the discharge cell with an adjacent discharge cell; a metal electrode formed in a first direction, and electrically coupled to the expanding part; an address electrode provided in parallel to the barrier rib in a second direction different from the first direction such that the address electrode crosses the metal electrode; and a link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell.

However, the prior art of record neither anticipates nor renders obvious to one ordinary skilled in the art the plasma display panel comprising the various elements as claimed above in <u>combination</u> with the specific limitation of link being formed at a predetermined depth extending from an end of the head part toward the expanding part,

wherein said predetermined depth is approximately 100 microns to 200 microns as set forth in Claim 49.

Claim 51 is allowable because of their dependency status from claim 49.

B. Claims 52-54 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, at least one transparent electrode of said transparent electrode pair including: an expanding part having a width which enlarges towards a center of the discharge cell, and a head part connected to the expanding part and having at least a substantially constant width; a barrier rib for dividing the discharge cell with an adjacent discharge cell; a metal electrode formed in a first direction, and electrically coupled to the expanding part; an address electrode provided in parallel to the barrier rib in a second direction different from the first direction such that the address electrode crosses the metal electrode; and a link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell.

However, the prior art of record neither anticipates nor renders obvious to one ordinary skilled in the art the plasma display panel comprising the various elements as claimed above in combination with the specific limitation of link being formed at a predetermined depth extending from an end of the head part toward the expanding part as set forth in Claim 52.

Claims 53-54 are allowable because of their dependency status from claim 52.

C. Claim 55 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a first transparent electrode having a first head part protruding from one side of a discharge cell into a center of the discharge cell, and a first strip part connected to the first head part; and a second transparent electrode which includes an expanding part having a larger width as it goes from the other side thereof within the discharge cell into the center of the discharge cell in such a manner to be spaced by a predetermined gap from the first transparent electrode within the discharge cell, and a second head part connected to the expanding part and having a substantially constant width, and a second strip part connected to the expanding part; a first metal electrode connected to the first strip part and a second metal electrode connected to the second strip part, the first and second metal electrodes being formed in a first direction; a barrier rib for dividing the discharge cell from an adjacent discharge cell; an address electrode provided in a second direction different from the first direction such that the address electrode crosses the first and second metal electrodes; a first link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell, the first link being formed at a first predetermined depth extending from an end of the first part toward the first strip part; and a second link overlapping the barrier rib for connecting to another transparent electrode of the adjacent discharge cell, the second link being formed at a second predetermined depth extending from an end of the second head part toward the expanding part

However, the prior art of record neither anticipates nor renders obvious to one ordinary skilled in the art the plasma display panel comprising the various elements as claimed above in combination with the specific limitation of each of the first and the second predetermined depths being approximately 10 microns to 200 microns as set forth in Claim 55.

D. Claim 57 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: sustain electrode pair including a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, and a first metal electrode connected to one of the transparent electrode pair and a second metal electrode coupled to other one of the transparent electrode pair, the first and second metal electrodes being formed in a first direction, at least one transparent electrode of said transparent electrode pair including: a neck part connected to the metal electrode, an expanding part connected to the neck part and having a width which enlarges as it goes into a center of the discharge cell, and a head part connected to the expanding part and having a substantially constant width; a barrier rib for dividing the discharge cell from an adjacent discharge cell and formed in a first direction; an address electrode provided in a second direction different from the first direction such that the address electrode crosses the first and second metal electrodes; and a link overlapping the barrier rib for connecting to a transparent electrode of said adjacent discharge cell, wherein the link is formed at a

predetermined depth extending from an end of the head part toward the expanding part.

However, the prior art of record neither anticipates nor renders obvious to one ordinary skilled in the art the plasma display panel comprising the various elements as claimed above in combination with the specific limitation of the predetermined depth being approximately 10 microns to 200 microns as set forth in Claim 57.

E. Claim 59 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a pair of transparent electrodes having a predetermined gap therebetween within a discharge cell, wherein at least one of said transparent electrodes includes: a stripe part, a head part protruding from the stripe part into a center of the discharge cell, and adjacent cell; a link overlapping a barrier for connecting to a transparent electrode of an a metal electrode connected to the stripe part and formed in a first direction; and an address electrode provided in a second direction crossing the metal electrode, wherein said link is formed at a predetermined depth extending from an end of the head part toward an expanding part.

However, the prior art of record neither anticipates nor renders obvious to one ordinary skilled in the art the plasma display panel comprising the various elements as claimed above in combination with the specific limitation of predetermined depth being approximately 10 microns to 200 microns as set forth in Claim 59.

Response to Arguments

Applicant's arguments filed on 7/8/08 have been fully considered but they are not persuasive.

A. In response to Applicant's arguments that Yoshida (JP 2001-325887) does not teach each black layer being formed in a first direction between the adjacent bus electrodes, the Examiner respectfully disagrees.

As a previous suggestion, Examiner suggests describing each black layer being formed/arranged between a first and second bus electrode, thereby mandating that the preservation of the black layer between respective bus electrodes, thereby eliminating the ambiguity in the current claim language.

While applicant has clarified the claim language, the scope of the claims is still reasonably taught by Yoshida.

For purposes of expediting prosecution, Examiner points out that Yoshida's black layer is formed only partially between the first and second bus electrodes. It should be noted that applicant's submitted drawings indicate, as pertaining to Fig. 9, a black layer that is formed entirely between the first and second bus electrodes. Additionally, the term "adjacent" prefacing "first and second bus electrodes" broadens the scope of the black layer.

For the reasons stated above, the rejection of the claims is deemed proper.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event

a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hana A. Sanei whose telephone number is (571)-272-8654. The examiner can normally be reached on Monday- Friday, 9 am - 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ Hana A. Sanei /
Examiner

/Toan Ton/
Supervisory Patent Examiner
Art Unit 2889